



Montana Office of Public Instruction
Linda McCulloch, Superintendent
In-state toll free 1-888-231-9393
www.opi.mt.gov/IndianEd

Mathematics Lesson Plan

Pow Wow Trails

Created by: Linda Engebretson

Grade 9 - Approximate Duration: 110 minutes

Stage 1 Desired Results

Montana Standard for Mathematics: Montana Standard 3, applying benchmarks of using basic operations with algebraic expressions, using algebraic models to solve mathematical and real-world problems.

Montana Standard 5, applying benchmarks of estimating, making and using measurements to describe, compare and/or contrast objects in real-world situations; investigating systems of derived measures; applying the appropriate concepts of estimates in measurements.

Essential Understanding 2: There is great diversity among individual American Indians.

Essential Understanding 3: The ideologies of Native traditional beliefs and spirituality persist into modern day life as tribal cultures, traditions, and languages are still practiced by any American Indian people.

Understandings:

1. Algebra is used to solve real-world problems.
2. Basic operations are used to solve algebraic expressions.
3. Estimates in measurement
4. Problem solving skills
5. Proportions are two equal ratios

Essential Questions:

1. Why is estimating important?
2. How will the budget be determined?
3. What is the importance of the scale factor of a map?
4. How is a ratio applied in calculating a real-world problem?

Students will be able to...

- Read a table with dates and time.
- Calculate the mileage of a vehicle.
- Estimate the cost.
- Calculate amount of money needed.
- Determine the distance using the scale factor or scale from a map.
- Apply fraction and percent operations.

Students will know...

1. The timeline for their travels.
2. How to find the total distance using a scale factor or a scale from the map.
3. How to develop a budget.
4. How to apply basic operations in doing the calculations of the cost and percents.

Stage 2 Assessment Evidence

Performance Tasks:

- *Calculate the total miles by using the scale factor or bar scale on a map
- *Calculate the total cost of gas using the mileage, distance, and miles per gallon of the vehicle.
- *Estimate the cost of the Pow Wow.
- *Calculate if there will be sufficient money for the Pow Wow trail they have created.
- *Apply percentages in estimating the cost for the Pow Wow trail.

Other Evidence

- *Journal of each Pow Wow describing the categories of dancers, drum groups, and games
- *The budget that was developed
- *Quiz over using cross products
- *Quiz over finding percent



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Continued

Stage 3 Learning Plan

Teacher notes:

"A Pow Wow is a gathering where Native American dancing, singing and celebration take place. There are several different powwows that take place throughout the country.... Some reports say the word pow wow has its origin from the Pawnee word pa-wa, meaning "to eat." Other sources say the word is of Algonquin origin and was originally pronounced pauau, which indicates a gathering of people for purpose of celebration or important event. In any case, it is a special time for people to gather and celebrate, meet old friends and create new friendships." *Your Guide to Understanding and Enjoying Pow Wows*. To learn more about Pow Wows look at the following Web site; <http://www.opi.mt.gov/pdf/IndianEd/Resources/PowWows.pdf>.

General rules to Pow Wow rules to follow;

- Stand during grand entry
- Do not enter the dance arbor once it has been blessed
- Never call the dancer's regalia a "costume" (outfit is acceptable)
- Respect everyone; non-Native, Native and especially the elders
- Have fun

This activity could be used at the beginning of the school year. It is a way to get their minds moving again by reviewing fractions, decimals, estimations, and calculations applying algebraic processes. This is a non-threatening way to get students involved and it is something the student has control over in the planning.

Procedure:

1. Give every student a map of Montana and a list of the Pow Wows in the state of Montana. The Pow Wows for the years 2007 and part of 2008 are attached.
2. Tell students they get \$1200.00 to create a budget that will take them to four different Pow Wows.
3. Students will budget the money for the following expenses:
 - Gasoline
 - Motel if they are not staying with family or friends
 - Meals (two per day)
 - Participation of games
 - Purchase of gifts from the vendors
 - Snacks and drinks while at the Pow Wow
 - Emergency: add 10% to the total of cost of gasoline, meals, motels, gift purchase, and snacks

4. After the students have been given their maps, the Pow Wow schedule and the total amount of money available to spend, have them find their trail.
5. Once students have determined their route or trail, as a class, find the scale on the map.
6. Discuss as a class: What is a map scale? (Answer: a single unit of distance on the map that is equivalent to the distance on the ground) There are two basic scales for maps:
 - Ratio: this is a scale represented or expressed as a fraction or a ratio. For example, 1:25 (ratio) represents one unit on the map for 25 units on the ground or 1 inch represents 25 miles on the ground.
 - A graphical or bar scale is ruler with ground distances added. The distance on the map is marked on the edge of a sheet of paper, then placed on the bar scale of the map and the distance read.
7. Students will find the total distance traveled on their Pow Wow trail. Find the total distance traveled by either applying the scale factor (or ratio) or using the bar scale. Here is an example of applying a scale factor (ratio) in finding the distance:

$$\text{Total distance} = (\text{scale factor}) \times (\text{total units measured from the map})$$

If a bar scale is being used, have students take the edge of a piece of paper and mark the edge, finding the distance.

8. Once all the students have found the distance, find the cost of gasoline. Before the cost of gasoline can be calculated, students must have an idea of the mileage of their vehicle. If they do not know this, use an average value of 20 miles per gallon of gasoline. Have students write down the mileage or use the average value of 20 miles per gallon.
9. Discuss as a class how the mileage of a vehicle can be calculated. (Answer: $\frac{\text{miles}}{\text{gallons}} = \text{mileage}$)
 Also discuss with the class if units are important in doing the calculations? (Answer: Units help in setting up the problem correctly and help in determining what is being calculated.)
10. Discuss with the class how the amount of gasoline for the Pow Wow trail can be calculated. Give students time to experiment with this to find the solution. Show all students (by writing on the board) one way to set this problem up:

$$\frac{20 \text{ miles}}{1 \text{ gallon}} = \frac{\text{total miles from Pow Wow trail}}{\# \text{ of gallons of gasoline used}}$$

11. Discuss with the class how to solve this problem. Suggest that a cross product is an easy way to solve it. Walk through solving this by completing it on the board with the whole class, showing how the units will divide out leaving only gallons, which is exactly what we are looking to find. Remind students how a cross product works: multiply the means by the extremes and set them equal to each other.

- In the example above the **means** would be: 1 gallon • total miles
 and the **extremes** would be: # of gallons • 20 miles.

- It would look like this: **1 gallon • total miles = # of gallons • 20 miles.**

The number of miles will be known and we will divide by the 20 miles. The unknown is the number of gallons. Once students have found the number of gallons of gas to be used, have them write this number down below the mileage. Make sure students label their answers.

12. Once the amount of gasoline is calculated, the cost can be found for the gasoline. Discuss with the class how this could be found. **Give students time to think about this problem. Allow them to experiment again and take suggestions as to how to set it up. After giving students time to think and experiment with this, coach them into setting it up like this: # of gallons • cost per gallon = cost for gasoline.** Have students write this calculation down below the number of gallons expected to be used. Remember to label the answers.
13. Discuss as a class what other expenses need to be calculated while on their Pow Wow trail. (Students should consider meals, motel rooms, cost of the food, games and vendors while at the Pow Wow and have some money set aside for emergencies.)
14. Take suggestions from students how the cost of meals could be calculated.
(Example: Cost per meal • number of meals per day • number of days on the Pow Wow trail = cost of meals)
15. Have students determine the cost of their meals. Write this cost down below the cost of the gasoline.
16. Next have students determine if they will be staying with family or have to find a motel room. Maybe they have a camper or trailer they can stay in. This will be an individual determination in the cost. However, the cost of a motel room during peak season would be approximately \$60.00 - \$70.00 per night. The price on these motels is a conservative estimate. Remind students they will be visiting four Pow Wows.
17. Have students write this cost of the motels, or the cost for a camper or trailer spot below the cost of meals.
18. Discuss with the class how much money will be needed to buy presents from the vendors. Discuss buying snacks while at the Pow Wow. (Snacks such as homemade lemonade, fry bread and Indian tacos are some of the foods usually sold at a Pow Wow.) Have students determine how much they will spend at each Pow Wow. Each student should write this amount below the cost for the motel or the camping spot.
19. Find the total for the Pow Wow trail by adding the cost of gasoline + cost of meals + cost of motels + cost of presents + cost of snacks = total cost.
20. Finally, discuss with the class how they could budget for emergencies. Suggest to the class about adding 10% onto the total cost. After finding the total cost (cost of gasoline + cost of meals + cost of motels + cost of presents + cost of snacks), have students find 10% of this amount and add it to the total cost.
21. Review with the class how to find the percent of a number. Remind students that 10% is 10/100 or 1/10 or 0.1. Have students write 10% as a fraction or as a decimal.

22. Have each student multiply the total cost of their Pow Wow by 0.1 or 1/10. Once this amount is found, add this to the total that was calculated in step 19. Now students have a cushion for emergencies.
23. Once students have calculated the cost and added 10% onto to their total, they need to look at their budget and make sure that the \$1200.00 will cover their Pow Wow trail.
24. What are some solutions if students go over their \$1200.00 budget? Have the class develop solutions for this problem.

Resources:

<http://www.opi.mt.gov/pdf/IndianEd/Resources/PowWows.pdf>

<http://www.visitmt.com/categories/ListCalendar.asp?Title=Pow+Wows+in+Montana&SiteTypes=Pow+Wow&SiteID=1>

Materials Needed:

Maps of Montana or other states (available from Montana Travel, Chamber of Commerce, or travel guides in communities)

Highlighters

Journals

List of Pow Wows in the state of Montana (see attached)

Calculator

Pow Wows in the state of Montana as of June 27, 2007 through April 20, 2008

Fort Kipp Celebration

Poplar 406-786-3431

Fort Kipp Celebration is a Pow Wow, which is a celebration of native culture and traditions through dancing, food, crafts, and fellowship with one another. All members of the General Public are welcome to participate or be a spectator.

06/28/07-07/01/07

Arlee 4th of July Celebration

Arlee 406-675-2700 ext 1222

Beginning its second century the Arlee 4th of July Celebration will begin on Thursday which is designated 'Camp Day'. Many participants will begin erecting encampments for the coming weekend. The evening is set-aside for Memorial Ceremonies, which acknowledge the tribal members who passed away.

07/03/07-07/08/07

4th of July Pow Wow

Lame Deer 406-477-6284 The premier event of the Northern Cheyenne is the annual Fourth of July Celebration, the largest wow-wow held on the reservation. Activities to observe and participate in include fun runs and health walks.

The Princess Contest (all princesses welcomed), Indian dancing contests in all categories

07/04/07-07/08/07

Valley of The Chiefs Pow Wow and Rodeo

Lodge Grass 406-638-2073 Valley of The Chiefs Pow Wow and Rodeo includes: rodeo, parade, Indian dancing, authentic costumes, teepee camping, and parade dance through the village (breaking camp) on the last day.

07/06/07-07/09/07

North American Indian Days

Browning 406-338-7276 North American Indian Days, an annual celebration and the largest and most impressive of Blackfeet Tribal events, hosts Native Americans from every region of the United States and Canada. Featured events include traditional drumming and dancing contests, the crowning of Miss Blackfeet, and a parade.

07/12/07-07/15/07

Wahcinca Dakota Oyate Celebration

Poplar 406-768-5186

The Wahcinca Dakota Oyate Celebration is a Pow Wow, which is a celebration of native culture and traditions through dancing, food, crafts and fellowship with one another. All members of the general public are welcome to participate or be a spectator. \$125/day for food stands, \$75/day for craft stands.

07/19/07-07/22/07

Standing Arrow Pow Wow

Elmo 800-883-5344 This is an Indian social gathering featuring drumming, dancing, and traditional dress and food. Visitors are welcome and asked to respect the dance area, which is sacred. Join us at one of the Indian country's most publicized events, Pow Wows. Learn the how's and why's of Pow Wow dancing.

07/20/07-07/22/07

Milk River Indian Days

Fort Belknap 406-353-2205 ext 367 Milk River Indian Days highlights spirited and colorfully clad dancers. The Pow Wow features Native American dancers and drummers combining culture, dance, and music for a spectacular display.

07/26/07-07/29/07

Wadopana Celebration

Wolf Point 406-768-7463 This celebration is the oldest traditional Pow Wow in Montana. The celebration is always the first weekend of August. The dancers participate for cash or prizes. It is a great weekend of fun and visiting among the elders and younger generations. They have special ceremonies for naming of individuals.

08/02/07-08/05/07

[Rocky Boy's Annual Pow Wow](#)

Box Elder 800-823-4478 The Pow Wow is an event of Indian Heritage and tradition. Dance, costume and drumming competitions are the featured events. Competitions last throughout the weekend with all ages participating. Exciting, excellent cultural demonstrations as well as ethnic and traditional food offered daily. 08/03/07-08/05/07

[Heart Butte Celebration](#)

Heart Butte 406-338-7521 This annual four day celebration takes place the second week in August and is 26 miles south of Browning in the community of Heart Butte, which is located on the Blackfeet Reservation. Heart Butte is one of the oldest traditional communities of the Blackfeet Reservation.

08/09/07-08/12/07

[Hays Pow Wow](#)

Hays 406-353-2205 The Hays Pow Wow is one of the area's finest outdoor celebrations and features a whole weekend full of dancing and singing by natives from throughout the United States and Canada. Many dancing contests for all ages (from tiny tots to Golden Age!) Hand drum singing contests also!

08/10/07-08/12/07

[Crow Fair and Rodeo](#)

Crow Agency 406-638-3700 From every western state and Canada, Indians come to camp along the Little Bighorn River to form the Teepee Capital of the World. There are spectacular parades each morning featuring authentic costumes, an all-Indian rodeo with cowboys from all over the nation, pari-mutuel wagering, and a wild horse race.

08/17/07-08/19/07

[Ashland Labor Day Powwow](#)

Ashland 406-784-2883 The arbor on U.S. Highway 212 between Ashland and the St. Labre Mission comes alive during the Labor Day weekend. Drummers and dancers from many tribes participate. Booths are set up for food vendors and Native American art and beadwork. Giveaways, gourd dancing and hand games are part of the festivities.

08/31/07-09/03/07

[Poplar Indian Days](#)

Poplar 406-768-7623 Poplar Indian Days is a Pow Wow, which is a celebration of native culture and traditions through dancing, food, crafts, and fellowship with one another. All members of the General Public are welcome to participate or be a spectator.

Poplar Indian Days will always be held during Labor Day weekend.

08/31/07-09/02/07

[Chief Plenty Coups Day of Honor](#)

Pryor 406-252-1289 This day of cultural sharing at this great Crow chief's home includes speakers, drummers and dancers; tours of the chief's house, medicine spring, and gravesite; and concludes with a buffalo feast. A craft fair is also being planned. All people are invited to participate in the Chief's great legacy.

09/01/07

[North American Indian Alliance Pow Wow](#)

Butte 406-782-0461 Butte hosts this annual celebration of Native American Dancing, food and music. There are vendors with Native American jewelry, beadwork and other traditional items.

09/15/07

[Native American Awareness Week](#)

Pablo 800-883-5344 Flathead Indian Reservation schools and the public share Salish, Kootenai, and Pend d'Oreille crafts, history, demonstrations, and exhibits by tribal departments during this week. Enjoy drumming, singing, and native dancing. Taste traditional fry bread and dry meat.

09/18/07-09/20/07

[Last Chance Community Pow Wow](#)

Helena 406-439-5631 The Last Chance Community Pow-Wow is held at the end of Native American Week in September. The Pow wow is a spiritual celebration to join together in dancing, singing, visiting old friends, and making new friends. Come on out and we will show you a wonderful time.

09/28/07-09/30/07

[American Indian Council of MSU Pow-Wow](#)

Bozeman 406-994-3751 Pow wows are an important contemporary expression of American Indian heritage. A Pow Wow is a Native American festival featuring traditional dancing, drumming and singing and traditional foods and arts and crafts. Various kinds of honor ceremonies and other spiritual ceremonies.
04/18/08-04/19/08

[40th Annual Kyi-Yo](#)

Missoula 406-243-5403 The Kyi-Yo Celebration seeks to enhance cultural awareness on campus and create a more diverse atmosphere in our community. Kyi-Yo members strive to give people pride in their own culture as well as an appreciation of each other's unique identities.
04/18/08-04/20/08